Social Complexity in North China during the Early Bronze Age: A Comparative Study of the Erlitou and Lower Xiajiadian Cultures

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ACCORDING TO TRADITIONAL Chinese historiography, the earliest Chinese state was the Xia dynasty (twenty-first–seventeenth centuries B.C.), which was located in the Zhongyuan area (the Central Plain). The traditional viewpoint also relates that, over the next two millennia, complex societies emerged in other parts of present-day China through the process of political expansion and cultural diffusion from the Zhongyuan. Some scholars recently have challenged this model because it is unilinear and does not allow for significant contributions to the emergence of social complexity from areas outside the Zhongyuan. Recent syntheses usually view the archaeological landscape of the late Neolithic Period (the second half of the third millennium B.C.) as a mosaic of cultures of comparable social complexity that interacted and influenced each other (Chang 1986; Tong 1981). Nevertheless, when dealing with the Early Bronze Age, the period identified with the Xia dynasty, most archaeologists still accept the main premises of the traditional model. They regard the culture or cultures of the Zhongyuan as the most developed and see intercultural interaction as occurring, if at all, only within the boundaries of that area.

One of the most heated debates among Chinese archaeologists in recent years has been over the archaeological identification of the Xia dynasty. The participants in this debate accept the authenticity of the historical documents, most of which were written more than a thousand years after the events, and try to correlate names of historical places and peoples to known archaeological sites and cultures.[1] As a result of the attention that has been focused on this period, we now have much more data on cultures of the late third and early second millennium B.C. in the Huanghe (Yellow River) Basin and other areas of North China. Nevertheless, because of its historical orientation, the debate has contributed little to our understanding of social processes and the development of social complexity in ancient China.

This paper makes use of the valuable data collected by Chinese archaeologists

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to address questions concerning social processes that operated in North China and that lead to the emergence of social complexity in that area. It is hoped that by testing models against different categories of the available archaeological data our understanding of these processes can be increased. Also, organizing the archaeological record so as to answer research questions and evaluate models enables us to point out specific categories of data that research in the future should attempt to collect and document. This second point is of special importance in light of the increased cooperation between Chinese and Western archaeologists. Knowing the achievements of Chinese archaeologists as well as the limitations of the data they collected can help us design "problem oriented" projects that have the potential of making significant advances in the understanding of social and historical processes.

More specifically, the first part of the paper focuses on data obtained from sites of the lower Xiajiadian Culture of northeastern China, and an effort is made to reconstruct the social and political organization of this culture. Each aspect of the lower Xiajiadian Culture is compared with relevant data from the Erlitou Culture, which most scholars believe represents the remains of the Xia dynasty. The lower Xiajiadian is only one of several so-called "peripheral cultures" that by the end of the third and the beginning of the second millennia B.C. show signs of emerging social complexity.[2]

The lower Xiajiadian Culture was chosen as the focus of this paper for two reasons: First, detailed comparison between the archaeological data of the lower Xiajiadian and the Erlitou Cultures addresses the basic assumptions of the traditional model. If this model is accurate, we should expect to find that the Erlitou Culture developed a higher level of social complexity, and that changes in the lower Xiajiadian Culture stemmed from direct Erlitou influence. Our conclusions on this question may be relevant to the understanding of the relations between the Erlitou Culture and other of the so-called "peripheral cultures."

Second, because of their locations in different ecological zones, lower Xiajiadian and Erlitou comparison allows us to examine the effects of climate and topography on interaction between them and on each individual development. This also permits discussion about the relation between the initial development of the two economic adaptations typical to North China in later periods, namely, intensive agriculture and specialized pastoralism. This discussion is relevant to understanding interaction between pastoralists and agriculturalists as an important historical force in other parts of the world.

GEOGRAPHICAL DISTRIBUTION OF THE LOWER XIAJIADIAN AND ERLITOU CULTURES

Like many other "archaeological cultures," the lower Xiajiadian and the Erlitou Cultures are defined by their ceramic assemblages. In other words, a site or a stratum at a site is labeled as belonging to one of these cultures if the types and style of its pottery fit the definition of the lower Xiajiadian or Erlitou ceramics.

According to this definition, sites of the lower Xiajiadian Culture are found in a very large area south of the Xilamulun (or Xar Moron) River in southeastern Inner Mongolia. This area includes parts of southeastern Inner Mongolia, western Liaoning, and northern Hebei Provinces as well as the Beijing-Tianjin plain

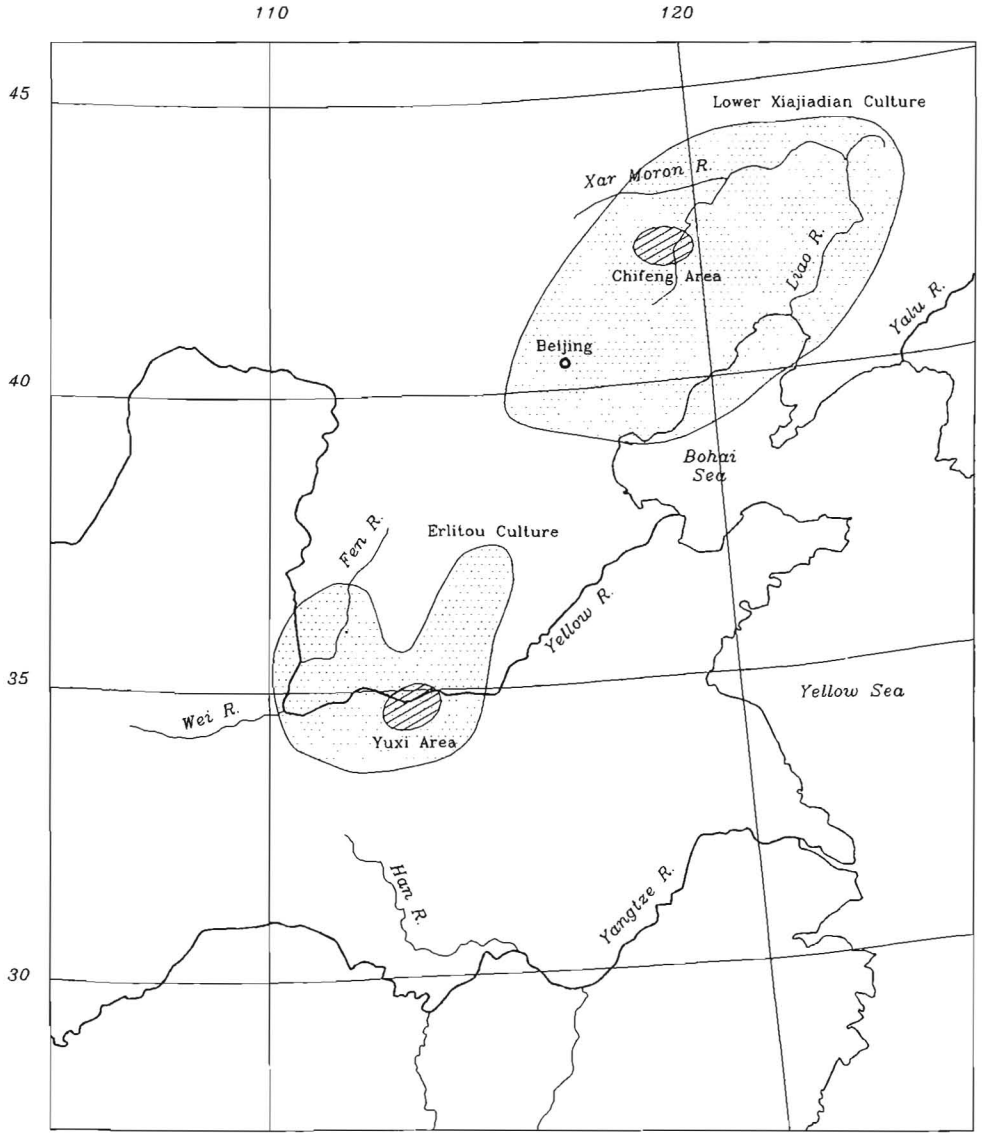

Fig. 1. Distribution area of the lower Xiajiadian and the Erlitou Cultures. Hatched marks represent the two cultures.

(Chang 1986:374; Tian 1992:10; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984: 342). In the same way, Erlitou sites have been identified in a relatively large area of central and western Henan, southwestern Shanxi, and southern Hebei (see Fig. 1) (Chang 1986:314; Thorp 1991:7; Zhao 1989:273; *Zhongguo Dabaike Quanshu; Kaoguxue* 1986–1988:116).

Although this is a very common method of defining archaeological cultures, not only in China but in other parts of the world as well, I believe it is not without problems. First of all, in most cases it means drawing arbitrary lines that di-

vide what is in fact a continuum into separate "cultures." This problem is apparent in the case of the lower Xiajiadian Culture. For example, in the southern areas of this culture, such as in northern Hebei Province, not only are the typical Xiajiadian vessels somewhat different from those in the north, but assemblages include both lower Xiajiadian pots and vessels that typologically belong to the Erlitou Culture of Henan and southern Hebei Province (Hebei Sheng Wenwu Yanjiusuo 1990:28; Liu Guanmin 1986; Zhangjiakou Kaogudui 1982). This problem may be overcome by refining the typology and adding to the cultural definition other elements from the material culture, like burial practices, house construction techniques, and so forth. In this way we may define new cultures or even conclude that there are overlaps between the regions occupied by several cultures. Nevertheless, I believe that if we intend to go beyond the material culture and try to understand political structures and social processes we have to do more than that. We cannot, for example, assume that even the best-defined "archaeological culture" necessarily represents one political unit or that similarities in material cultures are the result of social or political ties.

Although there is no "prescription" that can be used to solve all these problems, we can be aware of these and try to address some of them by focusing on specific questions. In the case of the lower Xiajiadian Culture, this work does not attempt to examine the entire region associated with that culture but rather takes as a starting point a much smaller and better-defined area. I have chosen the Chifeng-Aohan area, which is centered on the Yangjinhe (Yingjin) and Yinhe (Yin) River valleys and part of the Laohahe River valley, to serve this purpose. The data for comparison will also be drawn not from the entire Erlitou Culture but rather from a much smaller area between the present-day cities of Luoyang and Zhengzhou, both located in the Huanghe Valley. This area, which is sometimes called Yuxi, is considered by many to be the core of the Xia dynasty (see Fig. 1). By analyzing and comparing the data from these regions an effort will be made to define political borders and levels of social complexity and to address questions about social processes and interaction between cultures.

CHRONOLOGY

Dating the archaeological remains of the lower Xiajiadian Culture is crucial to the understanding of its position at the local and regional levels. At the local level, it is important to describe the process of culture change not only in relative terms but also in absolute terms, so that we can detect chronological overlap or gaps between cultures. At the regional level, it is impossible to consider interaction between cultures unless their dates are known.

When research on this area began, a general date of late Shang and early Zhou (late second and early first millennia B.C.) was ascribed to the lower Xiajiadian Culture (Neimenggu Zizhiqu Wenwu Gong Zuodui 1965:621). Even today, despite available ^{14}C dates, there is a tendency to continue using this chronology (Chang 1986:376; Li Jinghan 1980:163; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:339–344). Nevertheless, several ^{14}C dates associated with materials from lower Xiajiadian strata allow us to determine much more accurately the time span of this culture. At least five ^{14}C dates are known. They fall, after calibration, between 4360 ± 140 B.P. and 3645 ± 135 B.P. (Tian 1992:10; Xu 1986:90;

<table>
<tr><th>B.C</th><th>Chifeng Area</th><th>Yuxi Area</th></tr>
<tr><td>200</td><td colspan="2">Qin and Han</td></tr>
<tr><td>400
600
800</td><td>Upper Xiajiadian</td><td>Eastern Zhou</td></tr>
<tr><td>1000</td><td rowspan="3">???</td><td>Western Zhou</td></tr>
<tr><td>1200
1400
1600</td><td>Shang</td></tr>
<tr><td>1800
2000</td><td>Lower Xiajiadian</td><td>Erlitou</td></tr>
<tr><td>2200</td><td rowspan="3">Hongshan</td><td rowspan="2">Longshan</td></tr>
<tr><td>2400
2600</td></tr>
<tr><td>2800</td><td>Yangshao</td></tr>
</table>

Fig. 2. Comparative chronological table.

Zhang 1986:206). The range of 2300–1600 B.C. is therefore a reasonable estimate for the lower Xiajiadian Culture.

This estimate has gained support from correlations established between ceramic assemblages of the lower Xiajiadian Culture and those of the Zhongyuan-area Cultures. Excavations at sites located in central Hebei Province have revealed strata containing typical lower Xiajiadian ceramic vessels side by side with Zhongyuan-type vessels. The Zhongyuan vessels were identified as belonging to the Erlitou Period or perhaps the beginning of the Erligang Period. According to Chinese archaeologists, at least in this area the lower Xiajiadian Culture did not extend into the later part of the Erligang period (Zhangjiakou Kaogudai 1982:13).

The stratigraphy of sites in Chifeng and adjacent areas is relatively clear. Strata belonging to the lower Xiajiadian Culture were found underlying strata of the upper Xiajiadian Culture and overlying Hongshan cultural strata (Zhongguo She-

hui Kexaeyuan Kaoggu Yanjiusuo Neimenggu Gongtuodui 1979). Lower Xiajiadian seems to replace the Hongshan Culture (c. 3500–2000 B.C.) with no apparent gap and maybe even some chronological overlap existing between these two cultures (Chang 1986:184, 375). Between the lower and upper Xiajiadian Cultures there is apparently a chronological gap of some 700 years. The beginning of the upper Xiajiadian Culture is dated to the end of the western Zhou period (c. 900–800 B.C.) and its decline to the Warring States period (c. 400–300 B.C.) (Zhang 1986:207; *Zhongguo Dabaike Quanshu; Kaoguxue* 1986–1988:569). Some efforts have been made to identify archaeological cultures that can fill this gap, but none has yet been found, at least in the Chifeng-Aohan area. All of these issues have important implications for an understanding of social processes in this area. They will be further discussed in connection with diachronic developments, but only after an effort is made to describe the lower Xiajiadian society.

The chronology of the Yuxi area is relatively well known and it is therefore not necessary to discuss it in detail here. A large number of ^{14}C dates associated with Erlitou cultural strata covers a range of some 400 years between the twentieth and the seventeenth centuries B.C. (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:214; Zhao 1989). The culture is divided internally into four phases, each estimated to be some 100 years long (Zhao 1987:203). It is important to note that most of the impressive features of this culture, such as large rammed-earth foundations and bronze vessels, were only discovered in strata of the third and fourth phases and are therefore dated to the eighteenth and seventeenth centuries B.C.[3] The Erlitou Culture strata overlie and are probably directly related to the local Longshan Culture, which is itself dated to c. 2500–2000 B.C. (Luoyang Bowuguan 1978*a*; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:74–75; Zhao 1989:273). Erlitou Culture was replaced, without any chronological gap, by the Erligang phase of the Shang dynasty. However, the cultural continuity and political linkage between the two cultures are issues that are still hotly debated (Yin 1986; Zhao 1989:276–277).

MATERIAL CULTURE AND SOCIAL COMPLEXITY

The objective of this section is not the discussion of lower Xiajiadian material culture for its own sake but rather for the purpose of understanding the society that produced it. Unfortunately, this is usually not the objective of Chinese archaeologists, who tend to focus on descriptions of artifacts and objects outside their archaeological and social context. As a result, the data available on archaeological cultures are often unsuitable for the reconstruction of past social organization. In this paper an effort is made to compensate for this problem by considering different aspects of the material culture. Although each category of data may by itself be insufficient to support any social reconstruction of the lower Xiajiadian Culture, it is hoped that by observing common patterns and correlations between different aspects of the material culture we may be able to offer a better interpretation of this society. As mentioned earlier, a second and equally important objective of this section is to point out data categories that should be collected in the future and research strategies that could better address the questions we want to answer.

SETTLEMENT PATTERNS

Studies of settlement patterns (namely, the way in which sites are located in relation to other sites, special activity areas, and the environment) are important elements of archaeological research in the "West." In China, although archaeological surveys are conducted, no effort is made to ensure that these are systematic and unbiased. More important, these surveys are published, if at all, in a way that makes them very difficult to use. The authors usually provide only the numbers of sites belonging to each period, with only the more "important" sites described in some detail. The information presented below was extracted from such reports as well as from preliminary site excavation reports and general articles. We should therefore treat these results in a very cautious manner and see them not as conclusive but rather as suggesting tentative interpretations based on the available information.

We can distinguish between at least two types of lower Xiajiadian sites in the Chifeng-Aohan area: fortified and unfortified settlements. The fortified settlements are typically located in the river valleys not far from the main river and some 30–70 m above it. At least one side of these settlements is naturally protected by a deep canyon or steep cliff, and the other sides are protected by an artificial defense system. These defense systems consist primarily of stone walls and in some cases rammed-earth walls or a combination of both. In some settlements a ditch and/or a second wall was added to strengthen the defense installation. Also common are half-circular watchtowers that were added to the outer (and sometimes inner) face of the walls (see Figs. 3 and 4) (Xu 1986). More than 40 settlements of this type were discovered during a special survey of the Yingjinhe and Yinhe River valleys and several more were located in Aohan and other areas of southeastern Inner Mongolia and western Liaoning Provinces (Tian 1992:10; Xu 1986; Zhongguo Kexue 1975). In the Chifeng area, it is apparent that differences existed between these settlements. There is one large settlement where the walls enclose an area of more than 10 ha, five sites whose sizes range from 2.5 to 4 ha, with the rest of the settlements occupying an area smaller than 1 ha. Archaeologists have estimated that the small settlements include some 20–40 houses and the largest settlement may include up to 600 (Xu 1986:84–85).

There seems to be a positive correlation between the size of the settlement and the amount of labor invested in the construction of its defense system. For example, at the largest settlement (Chijiayingzi), an inner and outer wall were discovered, along with a ditch between them. At Xindian, one of the medium-sized settlements, the wall was excavated and found to be constructed from a core of rammed earth between an inner and outer stone wall (see Fig. 4). It is estimated that the walls at the larger settlements were wider and higher (Xu 1986:86). However, we do not have complete data on all of these sites.

The distribution of stone-walled settlements on the landscape is uneven, with settlements clustered into loose groups. Xu Guangji (1986) has divided the settlements in the Chifeng area into three such concentrations, each occupying an area some 20 km long along the Yingjinhe and Yinhe Rivers. It is interesting to note that each cluster includes one or more relatively large settlement. The best example is the western cluster, which includes some 20 settlements. Chijiayingzi, the

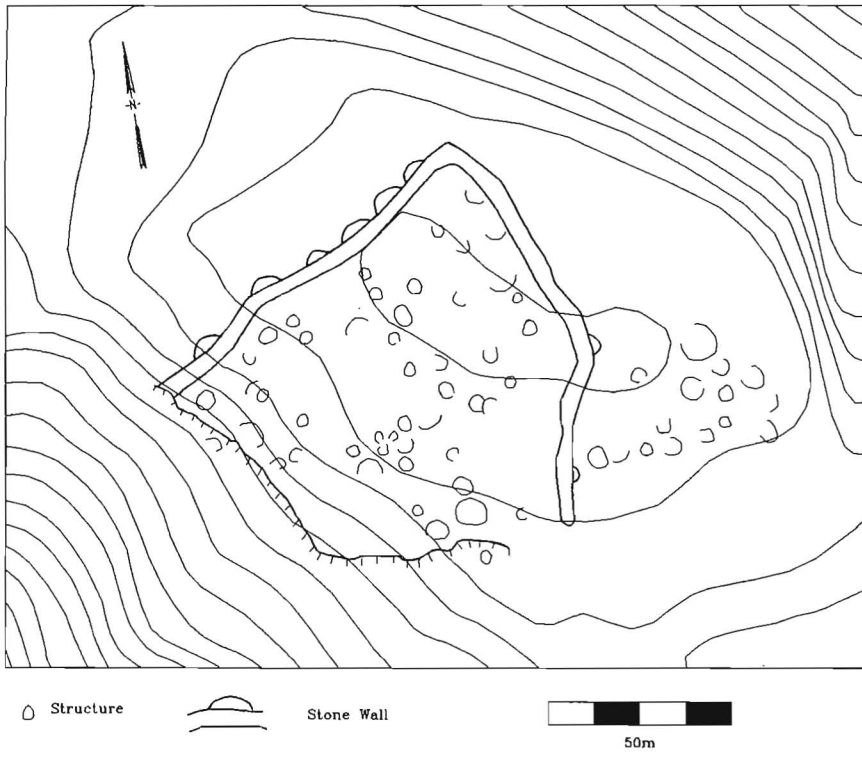

Fig. 3. Stone Wall at the lower Xiajiadian site of Xindian (after Xu 1986:83).

largest settlement, is located in the center of this cluster and two middle-sized settlements are located in the eastern and western parts of the cluster. The other two clusters seem to be organized in a similar fashion (see Fig. 5).

Aside from settlements with stone walls, several unfortified settlements of the lower Xiajiadian Culture have been located in the Chifeng-Aohan area. Information about the size and distribution of settlements of this type is scanty, although we do know that some of these, such as the type-site Xiajiadian, were apparently located very close or even inside one of the above-mentioned clusters. Other settlements, like Yaowangmiao, which is located some 17 km south of the modern city of Chifeng (Zhongguo Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1974), may not have been connected to such a cluster, although this is impossible to determine on the basis of available information. These settlements seem to be relatively small in size. Although not fortified, at least some of these settlements were located in geographical locations that provided them with "natural fortifications" and made them easy to defend (Zhongguo Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1974).

In their discussion of the archaeological correlates of chiefdoms, Peebles and Kus (1977:431) claimed that "there should be a hierarchy of settlement types and sizes, and the position of settlements in the hierarchy should reflect their

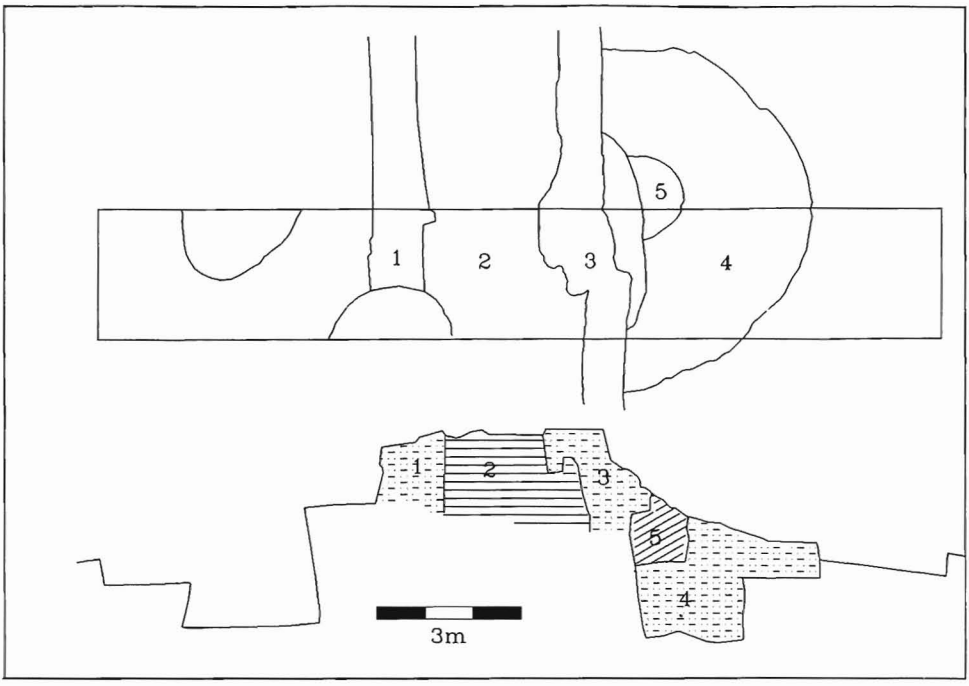

Fig. 4. Diagrams of two views of the same section through the wall at Xindian; upper diagram is the view from above and lower diagram is the view from the side. 1, inner stone wall; 2, rammed-earth core; 3, outer stone wall; 4, half-circular stone structure; 5, empty space inside the half-circular structure (after Xu 1986:87).

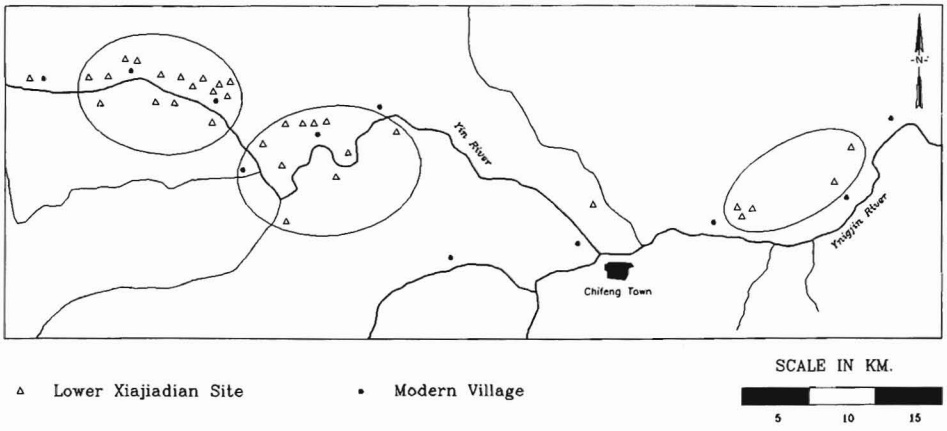

Fig. 5. "Stone wall" sites in the Chifeng area (after Xu 1986:83).

position in the regulatory and ritual network." It seems possible to reconstruct in the Chifeng region a settlement hierarchy that included two or three classes of settlements: within settlement clusters, centrally located large and medium-sized fortified sites surrounded by several small fortified and unfortified settlements. It is not unreasonable to assume that these settlement clusters, which were separated from each other by sparsely occupied areas, represent some kind of sociopolitical units. Nevertheless, because the time period under discussion is relatively long and the available information far from complete, this should be regarded as a hypothesis. More research is needed to determine the exact location of large, medium-sized, and small contemporaneous settlements, and how these locations reflect environmental as well as political constraints. As demonstrated by Steponaitis (1978) in his study of the Moundville phase of west-central Alabama, we may then be able to address more meaningful questions such as the nature of central authority, the relations that existed between different sites in the system, and the mobilization of resources.

Although more archaeological research has been conducted in the Yuxi region than in the Chifeng-Aohan region, there is substantially less information on settlement patterns in Yuxi. This is a direct outcome of research whose objective has been to locate "historical" places, mainly capitals of the Xia and Shang dynasties. Because the only site of this period large enough to qualify as a "capital" is the Erlitou type-site itself, most of the efforts have focused on this site and "most quantitative and qualitative statements about the Erlitou Culture are derived from the type site" (Thorp 1991:31).

The size of the Erlitou site is impressive indeed. It covers some 330 ha and occupies several low hills near the bank of the Luo River (Zhao 1987:197). It is not at all clear what proportion of this area was occupied in each phase, but even so it is clearly the largest site of this period in China. No evidence of fortification has yet been discovered at the site or at any other sites in this area.

Aside from the Erlitou type-site, all other settlements dating to this period typically occupy a small area of scattered finds (Zhongguo Shehui 1978). A map provided by Li Yangsong (1980:44) indicates that settlements of the Erlitou period tend to cluster around the Erlitou site, in contrast to the earlier Longshan settlements, which seem to be distributed more evenly in the landscape (see Fig. 6). According to Zhao, settlements of the earlier Erlitou period occupied a relatively small area between Luoyang and Dengfeng. It is not until the third phase that the area occupied by Erlitou settlements was extended to Zhengzhou in the west and Shanxian in the east (Zhao 1989:274). However, adding the results of recent excavations to those of the 1975 survey conducted in that area (Luoyang Bowuguan 1978a; Zhao 1987:202; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Luoyang Gongzuodui 1978) allows us to observe a somewhat different pattern. Although the earlier settlements were still evenly distributed, those dating to the later phases of this period (phases 3 and 4) tend to be concentrated around the Erlitou site and in the Huanghe Valley (see Fig. 7). The process of settlement aggregation around Erlitou may reflect its increasing political control over the surrounding area and the creation of clearer political boundaries. Concentration of settlements in the wider plains of the Huanghe Valley may also indicate that more intensive agriculture was practiced.

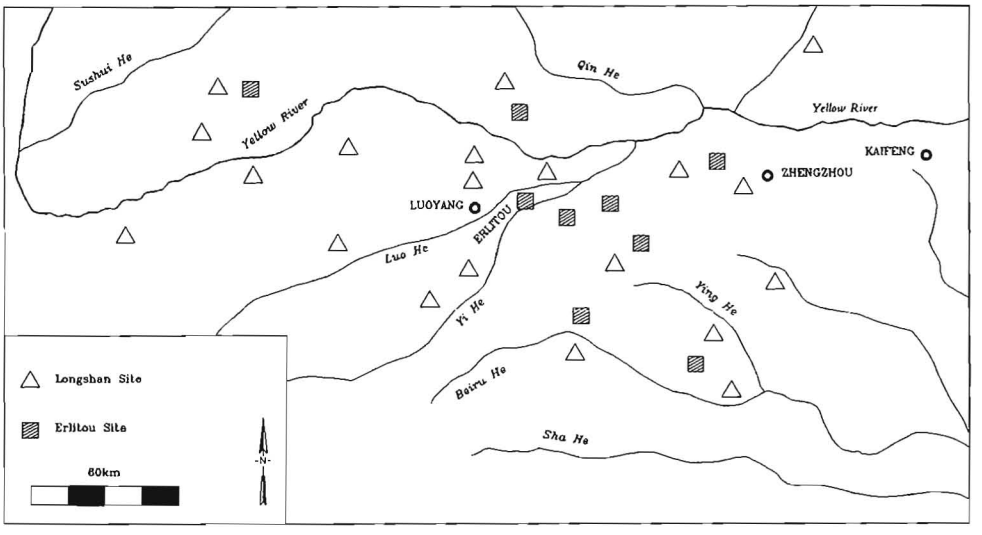

Fig. 6. Distribution of Longshan and Erlitou sites in the Yuxi area (after Li Yangsong 1980:44).

PERMANENT STRUCTURES AND INTERNAL ORGANIZATION OF THE SITES

In no site of the lower Xiajiadian in the Chifeng-Aohan area, or in any other region, was a sufficiently large area excavated to permit a clear understanding of site organization. In fact, only very few permanent structures, such as houses and storage pits, have been excavated. It is therefore difficult to generalize about this topic.

Most of the houses discovered so far are semisubterranean.[4] They are usually round, although square houses or square houses with rounded corners are also found. The most conspicuous feature of lower Xiajiadian houses is the extensive use of stone as construction material for walls. This is a local feature that has its roots in the building techniques of earlier periods in this area. Some scholars claim that this choice of stone for walls is simply the result of the raw material being available locally and that in areas where stone is difficult to find, house walls were built of rammed earth or mud bricks (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:343). Others claim that houses with mud bricks or rammed-earth walls, along with the use of white plaster to cover the walls and floors of houses, appear only during the second phase of the lower Xiajiadian period (Tian 1992:10). It is hard to confirm or reject these claims on the basis of the available information. However, should the second opinion be accurate, this could be seen as possible evidence for interaction with the cultures of the Zhongyuan, where these techniques were known earlier.

Most, if not all, of the houses that were excavated or surveyed had only one room. The size of houses varied. Some of them were small, averaging some 10 m^2, but others were larger, with a size of 40 m^2. Xu has described large houses of more than 100 m^2 inside the stone enclosures (Xu 1986:88-89). He claimed that the largest houses were square.

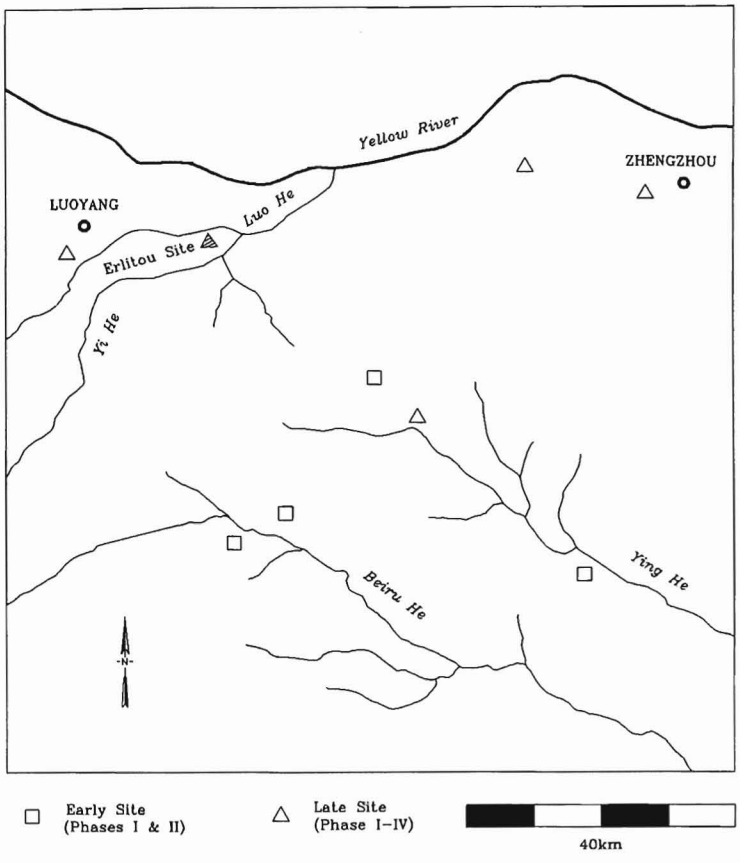

Fig. 7. Distribution of early and late Erlitou sites in the Yuxi area (map after Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Luoyang Gongzuodui 1978:23; dates of sites were added according to Luoyang Bowuguan 1978*a*; Zhao 1987:202; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Luoyang Gongzuodui 1978).

Houses were found inside the stone enclosures and, in some cases, outside the walls. The largest houses may have been located on the more elevated grounds of the site (Xu 1986:88–89). The only other installations found aside from houses are storage pits. No ritual or other special activity installations have yet been discovered at lower Xiajiadian sites. This stands in sharp contrast to the previous culture in this area, the Hongshan Culture, which is famous for its elaborate ritual sites (Chang 1986:181–188; Nelson 1990).

The most conspicuous structures discovered at the Erlitou site are large compounds that were built on top of low rammed-earth platforms. These compounds are usually referred to as "palaces," and for some archaeologists this is sufficient evidence for the identification of a state-level society (Tong 1986:27). So far, two large compounds have been discovered.[5] These were built on top of rammed-earth platforms 0.8 m high measuring 108 by 100 m and 73 by 58 m. The platforms were oriented north-south. On top a large gate was built along the southern side and galleries along the other edges. Most of the space inside

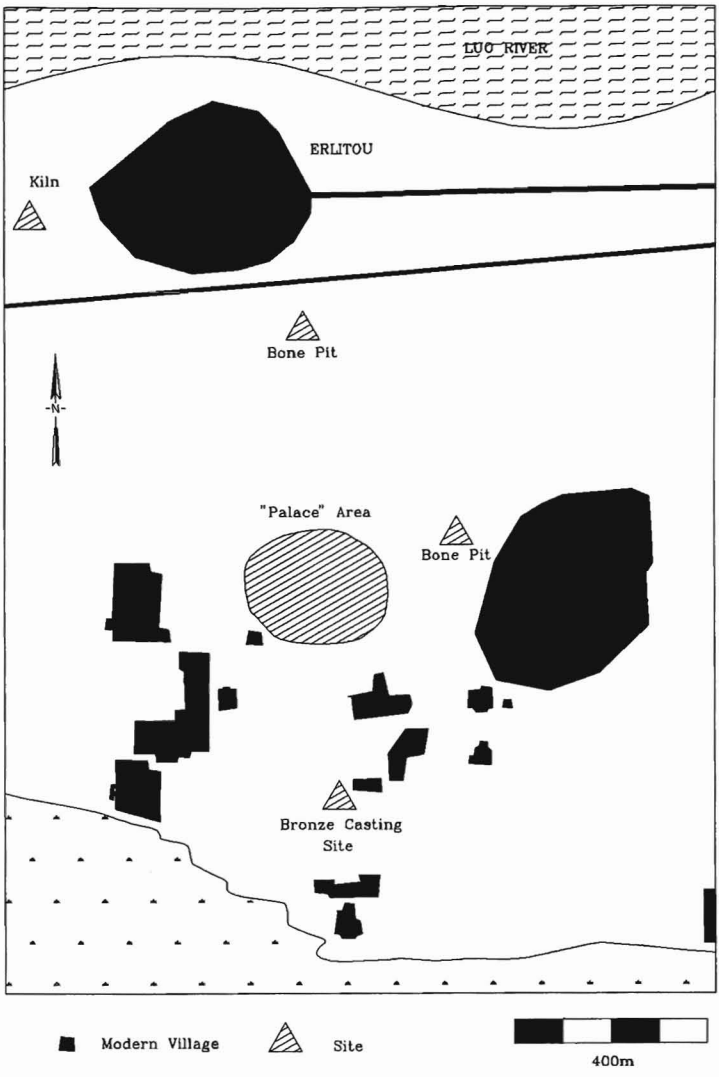

Fig. 8. Sketch map of the Erlitou site (after Zhao 1987:198). Dark straight lines represent modern roads.

these compounds consisted of a large open courtyard facing a hall built on a higher platform in the northern part of the compound (Thorp 1991:10–14; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:215–216; Zhao 1987). Although a detailed description of these structures is beyond the scope of this discussion, it may be said that they are evidence for an ability to mobilize a relatively large labor force. On the other hand, the relatively small roofed area seems to negate the interpretation of these structures as "palaces"[6] or expressions of personal wealth and power.

The sketchy information we have on the internal organization of the Erlitou site points to the large compounds being the centers around which the site was organized (see Fig. 8). Surrounding the compounds, several much smaller

rammed-earth foundations have been discovered (Zhao 1987:197; Zhongguo Kexueyuan Kaogu Yanjiusuo Erlitou Gongzuodui 1975:303). The current lack of sufficient data prevents us from identifying these as habitations or public buildings. Aside from the earth foundations, several small and medium-sized houses have been discovered. Some of these were semisubterranean, but others were built at ground level. Production areas and graves have been located mainly in "peripheral" areas far from the large compounds (Zhao 1987:198).

It is possible to interpret some of this data as evidence for a central authority capable of mobilizing a large work force and maintaining the social order. Differences in house type and size may reflect emergent social stratification, although more detailed information concerning their precise plan, function, and location is needed before a more specific statement can be made. No pounded-earth platforms or special structures have been reported from other sites of the Erlitou Culture. This strengthens the view presented above concerning centralization and social stratification in Erlitou society.

BURIALS AND CEMETERIES

Only a few graves have been found at most of the lower Xiajiadian sites. This probably has more to do with the size of the area excavated than with any particular social behavior. Information not only on individual burials but also on the size and organization of cemeteries was obtained mainly from two sites, Fanzhangzi and Dadianzi, both in the Aohan area.

More than 700 pit graves were excavated in the Dadianzi cemetery. Their layout in an area north of and outside the site defense system displayed a regular arrangement (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:343; Zhongguo Kexueyuan Kaogu Yanjiusuo Liaoning Gongzuodui 1975). Although no detailed report of the excavation has yet been published, some information on these graves may be obtained from descriptions of individual burials[7] and summaries of the general results. Most of the graves contain a single adult skeleton in the extended position with the head oriented to the northwest. Differences between the graves can be observed in their size, presence or absence of a wooden "coffin," and the number and quality of grave goods. Although some graves were over 2.2 m long, others were less than 1.7 m long. The main difference, however, is in their depth. The mean depth of burials is 2 m, but some were much more shallow and others were over 5 m deep (Zhongguo Kexueyuan Kaogu Yanjiusuo Liaoning Gongzuodui 1975:99). Remains of wooden constructions (coffins) were found in five of the first 54 excavated graves (Aohanqi Dadianzi Gongshe Lishi Yanjiu Xiaozu 1976).

Most graves contained the remains of pigs or dogs (sometimes only the head). These remains were placed with the corpse on the floor of the grave. Aside from animals, most graves (640 out of more than 700 graves) also contained ceramic vessels. These vessels were placed on a special shelf that was dug in the grave wall above the corpse's legs. The limbs of pigs and other offerings were also found on some of the shelves (Liu and Xu 1989:227; Zhongguo Kexueyuan Kaogu Yanjiusuo Liaoning Gongzuodui 1975:99). Among the ceramic vessels found in these graves the most elaborate were red and white painted pots. According to Liu and Xu (1989:231) these vessels were an expression of material

wealth and the social position of the deceased. Among the 620 graves that contained ceramic vessels, about one-third had one or more painted vessels. These pots do not seem to have been distributed randomly among the graves. All of the graves longer than 2.2 m contained these vessels, and 25 percent of the graves between 2.2 and 1.7 m long contained them. Very few graves under 1.7 m long had them. The same correlation holds if we compare the presence of painted pottery with the total number of vessels in the graves. Burials that contained at least one painted vessel include all the graves that had six or more vessels, 80 percent of the graves with five vessels, 60 percent of the graves with four vessels, 40 percent of the graves with three vessels, and 20 percent of the graves with two vessels (Liu and Xu 1989:232). Moreover, on the basis of published burials, we observe that most if not all of the vessels in the rich burials were painted (Zhongguo Kexueyuan Kaogu Yanjiusuo Liaoning Gongzuodui 1975: 100).

Other kinds of burial goods include stone tools, seashells, different kinds of stone beads, small metal objects, and oracle bones. About 30 percent of the male burials contained polished stone axes, which seem to have been ritual objects rather than working tools or weapons (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:343). Of the first 54 graves excavated at the site, only ten contained special ornaments like jades or stone beads, six contained shells and two contained metal objects (Aohanqi Dadianzi Gongshe Lishi Yanjiu Xiaozu 1976:79). One grave 4.8 m deep with a wooden "coffin" (grave no. 4) contained the bones of several animals, painted ceramics, a stone ax, stone beads, and 294 shells. The number of shells is greater than the combined number of shells found in the remaining 53 graves (Aohanqi Dadianzi Gongshe Lishi Yanjiu Xiaozu 1976:80).

Although information on the excavation of the cemetery at the Fanzhangzi site is even more fragmentary, it does seem to follow the general patterns observed at the Dadianzi site (Liu and Xu 1989:232; Neimenggu Wenwu Kaogu Yanjiusuo 1990:52). For both cemeteries we still lack crucial information such as the number of burials in each category, their distribution, the age and sex of the persons buried, and so forth. In light of the available information, it seems reasonable to conclude that we can cluster the burials at both sites into groups on the basis of the work invested in their construction and the quantity and quality of burial goods found in them. It may even be postulated that access to certain goods, like painted pottery, polished stone axes, and possibly shells and exotic materials, was restricted. These features seem to point to a society characterized by a social hierarchy and wealth accumulation. But as many have pointed out, we should not assume that differences in burials are accurate reflections of social structures or even that "the energy invested in the burials ... reflect fairly closely the economic position of the dead individual" (Earle 1987:290). Even if we assume that status differences did in fact exist, it is not clear whether this status was achieved (and therefore well correlated with age and sex) or ascribed. The best way to answer such questions is still being debated among archaeologists, although all agree that we must go beyond general descriptions and try to detect correlations between such aspects as the age and sex of the deceased, the number and types of burial goods, the work invested in the construction of the tomb, and its location in the cemetery (Braun 1979; Brown 1981; Peebles and Kus 1977: 431).

The burials excavated at the Erlitou site are usually divided into three categories on the basis of their size and content (Henan Sheng Wenwu Yanjiusuo 1990; Thorp 1991:17–20; Zhao 1987). Only one large grave has been excavated so far. It was found within one of the large compounds ("palace" no. 2), between the main hall and the outer wall of the compound. This grave measured 5.2 by 4.25 m, was 6 m deep, and had an inner ledge. It had been looted and no burial goods were recovered; only a dog's skeleton remained at the bottom. Graves of the second type usually measured about 2 by 1 m; some of them were constructed with an inner ledge. The floor was often covered with a layer of cinnabar, and some pits contained evidence for the use of lacquered coffins. These graves usually contained some 10–20 burial items including mostly ceramic vessels and in some cases bronze and jade objects as well as cowrie shells. Five of the richest burials also contained bronze vessels (Henan Sheng Wenwu Yanjiusuo 1990; Thorp 1991:17–20; Zhao 1987). The third type of burial includes small pit graves containing no grave goods, as well as human skeletons found in ash pits or without clear evidence for formal burial. Although many of the 100 graves excavated at the site were probably of this third type, the reports about them are sketchy at best.

We still lack clear evidence for cemetery organization at the Erlitou site. Burials were found throughout the site, but most of them seem to be concentrated in its northern portion. Excavations at other sites of the Erlitou period also fail to reveal a clear separation of habitation and burial areas. For example, 11 graves were excavated near and between houses at the Dongmagou site some 10 km west of the Erlitou site (Luoyang Bowuguan 1978*b*). These graves were all relatively small, approximately 1.9–2.1 m long, 0.5–0.8 m wide, and 0.3 m deep. No clear evidence for differences between the burials was reported. Altogether 30 ceramic vessels were discovered in these graves, with each individual being buried with two to three vessels.

SUBSISTENCE BASE

Tools and food remains found at lower Xiajiadian sites point to a "mixed economy." It seems that agriculture, animal husbandry, and hunting were all important subsistence activities (*Zhongguo Dabaike Quanshu; Kaoguxue* 1986–1988:571). No remains of grains have yet been reported from lower Xiajiadian sites. Nevertheless, stone sickles and polished stone axes seem to indicate the presence of agriculture. The relatively large number of storage pits found at lower Xiajiadian sites (Liaoning Sheng Wenwu Ganbu Peixunban 1976; *Zhongguo Dabaike Quanshu; Kaoguxue* 1986–1988:571; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1979) also supports this notion. At almost every excavated site, archaeologists have reported the recovery of many animal bones. The most commonly identified animals include the pig, dog, sheep/goat, and cattle (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:342; Zhongguo Kexueyuan Kaogu Yanjiusuo Liaoning Gongzuodui 1975; Zhongguo Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1974; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1979). Some of these reports indicate that pig bones were the most numerous. Beside the remains of domesticated animals, deer bones have also been found at many of the sites. This and the fact that microliths

are part of the lithic inventory of lower Xiajiadian sites (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:340; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1979) point to the importance of hunting.

Agriculture and the importance of pig husbandry to lower Xiajiadian Culture in the Chifeng-Aohan area indicate a relatively stable and sedentary way of life. This way of life is also reflected in other aspects of the material culture, such as site organization, the construction of permanent structures, and the size of graveyards. Nevertheless, it seems possible that certain elements of the society led a more mobile way of life and practiced hunting or even herding.

The data available for the Erlitou Culture of the Yuxi area are not fundamentally different from those of the lower Xiajiadian Culture. Like the Longshan, and probably even earlier cultures in this area, Erlitou Culture was an agricultural society. Many bones of pig, dog, sheep/goat, cattle, and chicken that have been excavated at Erlitou sites attest to the importance of animal husbandry (*Zhongguo Dabaike Quanshu; Kaoguxue* 1986–1988:117). In contrast to lower Xiajiadian sites, however, there is no evidence for hunting on a substantial scale or the existence of any mobile population.

CRAFT SPECIALIZATION AND DIVISION OF LABOR

I believe that there exists clear evidence for the existence of specialization and the division of labor in the lower Xiajiadian Culture. The following is a brief account of this evidence.

Ceramic Production

There is no agreement among Chinese archaeologists concerning the proportion of ceramics of this period that may have been produced on the fast wheel. According to recent articles, it seems that at least a large proportion of the vessels were produced in this manner (Tian 1992). Technically, several of the pots were of high quality and displayed a level of standardization that may reflect specialization. The clearest examples of advanced ceramic production are the painted vessels, although other vessels (some of them polished and well executed) may also point to the same conclusion. More important than the shape of the vessels is the probable existence of a specialized industry that supplied ceramic vessels to be used solely as grave goods. Liu Jinxiang (1986:101) has claimed that most of the vessels found in the graves at Dadianzi were not intended for daily use. Although at some sites a few sherds of painted pottery were found outside the graves (Liu and Xu 1989:233), this seems to be a reasonable conclusion.

Bronze Production

Bronze objects have been discovered in graves and in habitation contexts at some ten lower Xiajiadian sites (Beijing Gangtie Xueyuan Yejin Shizu 1981; Liaoning Sheng Wenwu Ganbu Peixunban 1976; Neimenggu Zizhiqu Wenwu Gongzuodui 1965:621; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:340; Zhongguo Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1961:78). The most common objects are the so-called "copper earrings," although knives and other

small tools and ornaments have also been found. A two-part stone mold and a ceramic mold were found at sites in the Chifeng area (Beijing Gangtie Xueyuan Yejin Shizu 1981:289; Liaoning Sheng Wenwu Ganbu Peixunban 1976:209). Some of the artifacts were made of a bronze alloy that contained up to 10 percent tin, and others were still made of copper (Beijing Gangtie Xueyuan Yejin Shizu 1981:289). It is unlikely that large-scale metal production took place at lower Xiajiadian sites. Nevertheless, metallurgy seems to have been quite developed.

Other Industries

Although there is little information on this subject, my impression is that some kind of specialization existed in the production of tools and ornaments. A developed and rich bone industry may be one area of production where specialization existed (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:341). Some general reports mention the presence of bone tool production areas in the Chifeng region (Liaoning Sheng Wenwu Ganbu Peixunban 1976:209) and may give support to this conclusion. The same may be true for stone tools and beads, some of them made from rare and hard stones.

Commercial Activity

Not much evidence exists to attest to long-range exchange in the lower Xiajiadian Culture. Indications for such activity include seashells found in graves. The fact that hundreds of these seashells were found in graves at the Aohan area, which is located more than 200 km from the sea (Aohanqi Dadianzi Gongshe Lishi Yanjiu Xiaozu 1976:79), may reflect some level of commercial activity. Some ceramic vessels found in graves at Dadianzi were possibly brought from an area some 500 km to the east (Liu Jinxiang 1986), and painted lower Xiajiadian ceramics were found in Hebei Province. These may reflect exchange relations between the Chifeng-Aohan area and other regions and the activity of part-time specialists that produced the artifacts and transported them.

Specialized Religious and Ceremonial Activity

As previously mentioned, and in comparison with earlier cultures in this area, excavations at lower Xiajiadian sites have produced little evidence for religious or ceremonial activity. The only exceptions are the oracle bones found at almost all of the sites of this period (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:342; Zhongguo Shehui Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1979). Oracle bones were also found at sites of other contemporaneous cultures, but only in the lower Xiajiadian Culture were they drilled before they were subjected to heat. This is relevant because it links this culture to the Shang, where divination was carried out in a similar fashion. Furthermore, it also reflects ritual activity that was probably performed by specialists.

Much more evidence for specialization is known from the Erlitou Culture than for the lower Xiajiadian Culture. Most of this evidence has already been discussed. The internal organization of the Erlitou site reflects the organization

of production in different areas (see Fig. 8), and the differences between the type-site and other Erlitou period sites may reflect control over production. Materials such as cowrie shells, turquoise, and jade, as well as finished objects such as lacquered artifacts, have been interpreted as possible evidence for exchange and long-distance trade (Thorp 1991:29).

The most striking and often used example for craft specialization during the Erlitou period is the bronze industry (An 1981; Beijing Gangtie Xueyuan Yejin Shizu 1981:287; Thorp 1991:23–27). Strata 3 and 4 at the Erlitou site yielded the earliest bronze vessels yet known in China. Fewer than ten Jue bronze vessels were excavated at the type-site. They were all cast using the multiple piece mold technique. The use of the multiple piece mold technique to cast a large number of different bronze vessels is one of the important aspects of the Chinese Bronze Age (c. 1500–300 B.C.). Moreover, bronze vessels are known from classical texts to have had an important role in court rituals. For these reasons the existence of these vessels at that Erlitou site suggests to some scholars the existence at that time of complex social structures known from later periods.

However, it should be pointed out that, although bronze production in Erlitou was much larger in scale and more sophisticated than in any earlier or contemporaneous society elsewhere in China, the scale of production in Erlitou is minute in comparison with that of the Shang and Zhou periods. Relevant to this discussion is the chronology of these finds. Most of the evidence for specialization dates to the late Erlitou period. Therefore, as for any other feature of Erlitou society, we must avoid identifying any advanced level of production with the whole of the Erlitou Culture, but rather see it in the context of a dynamic process in which technologies and social structures changed over time.

DISCUSSION

Social Structure and Political Organization: A Synchronic View

Now that the relevant information has been presented, an effort is made here to combine the different aspects into one coherent reconstruction. I believe that we can be quite confident in describing some aspects of the lower Xiajiadian Culture. Sites of this period were permanent settlements occupied over long periods of time. They were centers of agricultural production and animal husbandry as well as of other activities concerned with food and craft production. At least some tasks were performed and organized above the household level and probably even above the individual village level. The strongest piece of evidence for this notion comes from the defense systems that surrounded many of the settlements. As described earlier, these were sophisticated constructions that required substantial work investment and reflected central planning and the organization of the labor force. In a recent article, Carneiro (1990:197) has gathered ethnographic descriptions that among other things point to a connection between the intensity and scale of warfare and the tendency to construct fortifications. The nature of lower Xiajiadian defense systems as well as the location of the settlements clearly point to a society that was involved in conflicts. It is not unreasonable to assume that the conflicts that forced people to build such large defense systems were themselves quite large in scale. In the same way, the organization

of large armies that attacked and defended the "stone wall" settlements implies some type of central authority.

Considering the nature of this central authority, we may entertain three types of evidence. First, investment in grave construction and differences in burial goods may reflect a situation where a relatively narrow cross-section of the population received preferential treatment. Second, according to some preliminary research on the internal organization of the sites, there seems to be a correlation between house size and its position in the site. Larger houses were located in central and higher places (Xu 1986:89). This correlation supports the cemetery evidence for differences in social status. Third, the long period during which the sites were occupied and maintained their position in the settlement hierarchy may reflect a stable social system and authority.

All this, I believe, can be better understood as reflecting a situation in which social status was stable and probably inherited, rather than one characterized by an ad hoc organization and unstable differences within a basically egalitarian society. Although the evidence for craft and other types of specializations is far from conclusive, we may assume that some specialized activities had been coordinated by the central authority. Further research on this point should address questions concerning the location of activities at the sites and the possible concentration of activities in one or several sites that may have served special functions within the settlement system.

Not unrelated to this discussion is the question of the size of lower Xiajiadian political unit(s) in the Chifeng-Aohan area. I believe that the presence of site clusters characterized by one or more central large sites has a bearing on this question. A comprehensive and systematic regional survey is needed to confirm the hypothesis that each site cluster represents a sociopolitical unit (Johnson 1977). Nevertheless, this organization seems to reflect political units that were organized above the individual site level. These units were located in the main river basins and probably also controlled the surrounding mountainous areas. The size of the sites and the amount of energy invested in their defense systems probably reflect a political hierarchy of two or three levels. As mentioned earlier, each site cluster occupies an area some 20 km long within the river basins. This seems a reasonable size for a political unit of this period.

Although everything seems to point to the existence of a social and political hierarchy, it does not seem that differences between social strata were very pronounced. To conclude, the available evidence points to the existence of several small-scale chiefdoms in the Chifeng-Aohan area. I believe that this social and political system was not fundamentally different from that of societies inhabiting the Zhongyuan area at the time. Although the data from the Erlitou period can be interpreted as reflecting a chiefdom that covered a somewhat larger area and was perhaps more centralized than the Chifeng-Aohan societies, the differences are, generally speaking, quantitative not qualitative. For example, the Erlitou public buildings (or compounds) do not seem to have required a larger labor input than the elaborate defense systems of some lower Xiajiadian sites. The same is true for graves. Except for the one large Erlitou grave that was part of a public building and therefore may have been associated with ritual rather than secular status, all the other graves at Erlitou sites reflect social differentiation not much greater than that found in lower Xiajiadian graveyards.

The comparison presented above was not intended as a "competition" for the honor of being recognized as the most complex society in China at this time. Rather, I hoped to demonstrate that during the late third and early second millennia B.C., complex societies emerged in different parts of China. I believe that the important questions we should address have to do with the processes through which these societies changed and developed and with the connections and interaction that may have linked them. In the following sections two of these issues are discussed: first, the initial development of the lower Xiajiadian Culture, and second, the "disappearance" of the lower Xiajiadian Culture and the chronological occupation gap in the Chifeng-Aohan area before the appearance of the upper Xiajiadian Culture.

The Initial Development of the Lower Xiajiadian Culture

At many sites, strata belonging to the lower Xiajiadian Culture have been found directly overlying strata belonging to the Hongshan Culture (*Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:172–173). The geographical distribution of these two cultures is similar and there is no chronological gap between them. However, because of clear differences in the material expression of these two cultures, most scholars believe that the lower Xiajiadian Culture did not develop directly from the Hongshan Culture. According to K.C. Chang (1986:375):

> The Lower Hsia-chia-tien (Xiajiadian) has been regarded as another local version of the Lung-shan Culture or the Early Shang Culture. But its virtual coincidence in geographic distribution with the antecedent Hung-shan Culture would lead one to suspect that the emergence of the Lower Hsia-chia-tien Culture was the result not of a Lung-shan intrusion but of a drastic replacement of the Hung-shan Culture due to very strong influence from Hopei (Hebei), first during the period of the Lung-shan Culture and then continuously during the Shang and Western Chou (Zhou) dynasties as well.

Other scholars have postulated an intrusion of Longshan Culture from the southwest (Tian 1992:12), but others still try to demonstrate the continuation of local traditions (Xiang 1989:209).

As usual, the debate is centered around ceramic typology and a few other "cultural traits." Clearly there is a significant difference between the ceramic inventory of the Hongshan and the lower Xiajiadian Cultures. It is also true that some traits of the lower Xiajiadian, like pottery types (especially the Li tripods), use of the rammed-earth building technique, and the plastering of house floors and walls with white plaster, seem to indicate connections with the Zhongyuan area. On the other hand, two points can serve to show the problem with this "southern invasion" theory:

1. The lower Xiajiadian Culture displays many local traits for which no parallels could be found in other areas. These include, among other things, painted pottery, burial customs (especially the placement of grave goods on a "shelf"), and the widespread use of stones as building materials. Moreover, even the features that suggest contact with the Zhongyuan area never imitate southern ones. The lower Xiajiadian Li tripod, with its short legs and flaring wide rim, is very different from Li tripods found in the Longshan or Erlitou Cultures. The same is true for the use of the rammed-earth technique common in the Zhongyuan

and used at lower Xiajiadian sites to build an earth core between the two faces of a stone wall (see Fig. 4). This particular practice has not to my knowledge been found elsewhere.

2. At least some of the traits common to both the lower Xiajiadian Culture and cultures of the Zhongyuan area may have in fact diffused from north to south. One example is divination with oracle bones. Not only has the earliest oracle bone known so far in China come from the north[8] (Nelson 1990; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:179), but the lower Xiajiadian Culture is also the only culture of this period in which the bones were drilled and prepared before they were subjected to heat. Drilling became the standard treatment of oracle bones in the Zhongyuan only later during the Shang period. On the basis of dates for the lower Xiajiadian Culture it seems that many other features, such as bronze technology and burial practices (like dog sacrifice), could not have diffused from the Zhongyuan. This point is made even stronger if we keep in mind that many of the diagnostic features of the Erlitou Culture appear only during its latest phases.

I believe that we have to account for two interesting developments that took place in the Chifeng-Aohan area at the end of the third millennium B.C. The first is the rapid transition that led from the Hongshan to the lower Xiajiadian Culture. This transition involved not only a change in material culture but also a change in ideology and social organization. In the Hongshan Culture there are few expressions of social or material differences between individuals (as expressed in graves, houses, etc.), but a large investment of labor went into the construction of ritual centers and the production of ritual objects (Chang 1986:183-187; Tian 1992:4; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984: 172–174). In contrast, the lower Xiajiadian Culture is characterized by the clear expression of social and possibly wealth differences, and the investment of labor in the construction of defense systems that had social and political rather than religious meaning.

The second development is the inclusion of the lower Xiajiadian Culture into what K. C. Chang (1986:234–294) has called "the Chinese interaction sphere." This so-called "interaction sphere" actually refers to similarities in some aspects of the material expression of Late Neolithic cultures over a large area of China. As mentioned earlier, although these similarities do exist, no real long-distance political or commercial ties can yet be demonstrated. The question is, therefore, how can we account for these similarities and how do these relate to social changes that took place in these societies at the same time?

The data presented above do not support the idea of similarities being the outcome of political control, large-scale immigration, or even one-way diffusion. We should consider a model that can explain limited interaction at the broad regional level in the context of needs and motivations at the local level. Models of this kind have been offered to explain changes that took place in early Bronze Age Europe. Wessex is probably the best known example of change from the seemingly communal activity of monument construction to individually oriented activity such as the practice of rich burials and the building of defense systems. At the same time common traits in material culture appear over a large part of Europe (the so-called "Bell Beaker culture"). According to the model pro-

posed by Shennan (1982:158), monument building is an activity that "impl[ies] an ideology in which the position of powerful individuals was seen as dependent on the collective activity of the community." In those societies the position held by the elites was dependent on their relationship with the people. They were able, however, to distance themselves from the community and gain an independent source of power by adapting a new foreign ideology in which prestige was associated with the consumption of burial goods, some of them obtained through connections with other elite groups (Shennan 1982).

In this model similarities between different areas may be explained either as expressions of a similar ideology that served to legitimate the position of the elite or as the result of exchange in prestige items. These common traits may even be "by-products" of these relations and may include ideas (e.g., designs and decoration of pottery, etc.) that are passed along the communication network and adapted without any significant meaning attached to them. The preexistence of elites explains how this seemingly rapid process could have happened without an external "invasion" of any sort. Although some external input was needed to trigger internal developments, the relations between societies were basically equal.

I believe that this model can serve as an appropriate starting point for research on the development of social complexity in the area. Further advances will require more concrete evidence for relations between areas (movements of raw materials and artifacts) and the function of these relations at the local level. Also needed will be a better understanding of the local political and social systems. Other lines of future research should include the role of conflict in the development of complex societies. According to the model presented by Carneiro (1990: 191), "war has been the principal agent by which human societies, starting as small and simple autonomous communities, have surmounted petty sovereignties and transformed themselves, step by step, into vast and complex states." The fortifications found at many lower Xiajiadian sites can be interpreted as evidence that in an environment where conflicts are common, leaders can gain personal power and institutionalize their position. On the other hand, it may be the case that the intensification of conflict is the result of more centralized authority and not vice versa. To evaluate these and other models, a much more sensitive chronology of the lower Xiajiadian Culture must be developed. Such a chronology will enable us to observe processes that operated during that period. By comparing the chronological position of processes such as changes in settlement patterns, population growth and aggregation, intensification of conflict, and increased status and wealth disparities, it will be possible to address questions of cause and effect.

The "Disappearance" of the Lower Xiajiadian and the Chronological Gap before the Appearance of the Upper Xiajiadian Culture

The apparent collapse of social complexity in the Chifeng-Aohan area and the lack of evidence for any settlement activity there for more than 500 years raise some questions that may be of relevance to general issues beyond the specific case of the lower Xiajiadian Culture. These include questions such as why and

how complex societies collapse, and whether a decline in the amount of material data recovered (or its complete absence) necessarily implies a simpler society.

Two models have been put forward to account for the developments that took place in the Chifeng-Aohan area and other areas of North and Northwest China during the middle of the second millennium B.C. The first model sees the changes occurring in the "periphery" as resulting from the expansion of Chinese dynasties from their core area in the Zhongyuan to include large areas in the north. There are many late Shang (fourteenth–eleventh centuries B.C.) documents that discuss Shang wars with their neighbors and evidence for Shang groups occupying some of the areas just south of the Chifeng-Aohan area (Chang 1986:376; Lin 1986:238). These groups could have forced their political rivals out of this region.

This model is, however, not well supported by the archaeological and historical data. According to Lin (1986), the only evidence for the "presence" of Shang in the northern zone is Shang bronzes found in graves of that area. These bronzes, which have been found alongside typical northern bronzes, may be evidence for exchange between the Shang and local groups rather than providing support for the idea of Shang political control. Moreover, the late Shang state as it is depicted in the oracle bone inscriptions was, according to David Keightley (1983:548), not a solid territory under the Shang control but rather a dynamic series of pro-Shang and anti-Shang jurisdictions. The Chifeng area was hardly affected by this kind of indirect political influence of the Shang (Keightley 1983:544).

A second model sees social change as resulting from environmental change. According to this model, there was a shift to a colder and drier climate, which forced people who had been living in marginal areas either to emigrate or to adapt by changing their lifeway from a sedentary one based on a mixed economy to pastoral nomadism (Qiao 1992). Although the information on the palaeoclimatology of China is incomplete, we possess the results of recent research on this question from regions very close to the Chifeng-Aohan area. In his research on the Ordos area, Shi (1991) has used pollen, chemical, and isotopic information from river bed cores to draw some conclusions regarding changes in precipitation and average temperature. Although changes in precipitation did occur, they do not coincide with the "collapse" of the lower Xiajiadian Culture (see Fig. 9*A*). The period of driest climate was just before the end of the first millennium B.C., a period when the area was occupied once again. Changes in temperature provide a better fit with changes in settlement patterns in the area. The coldest period was around 1000 B.C. (see Fig. 9*B*), exactly the time for which we possess no archaeological data for the area. Lower average annual temperatures and especially decrease in frost-free days per year could have had a negative effect on agricultural productivity. Climate change could certainly have had an effect on societies living in marginal areas, but it is impossible to explain all the changes observed in the Chifeng area based on this factor only.

A new model is proposed here, one that acknowledges the possible effect of climatic changes, but emphasizes the social and economic environment that stimulated the development of specialized pastoralism. Most scholars agree that specialized pastoralism is an adaptation that cannot be separated from the presence of agricultural societies. People cannot support themselves solely on pas-

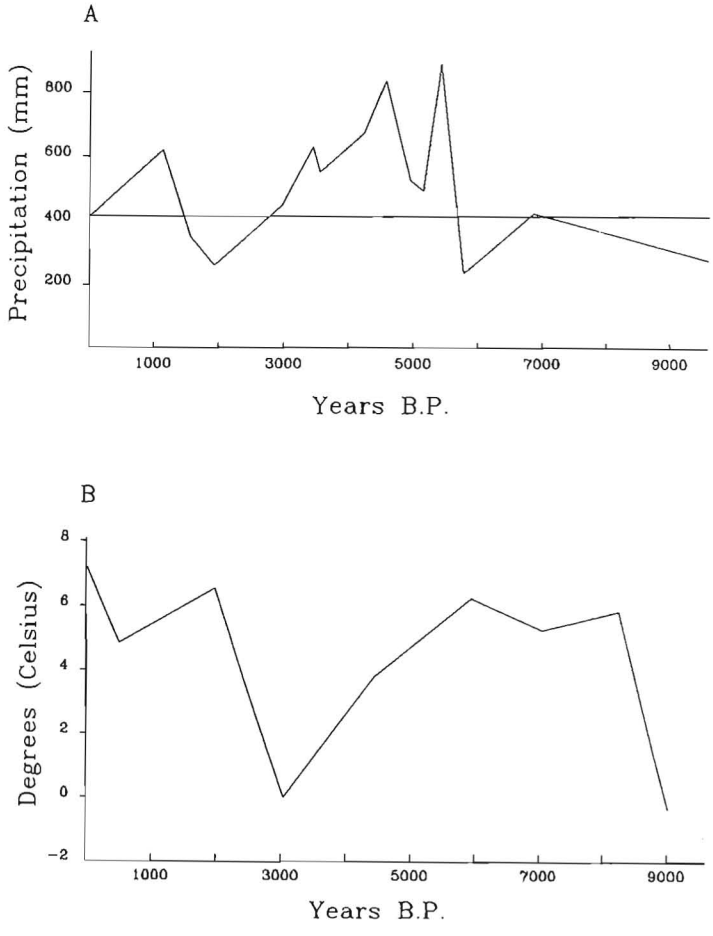

Fig. 9: Climate changes in the Ordos Region: *A*, changes in precipitation (the horizontal line expresses the average precipitation over the last 30 years) (after Shi 1991:118); *B*, changes in average temperatures (after Shi 1991:119).

toral products, and therefore even the most specialized pastoral nomads need to supply their diet with grains (Cribb 1991:13–14; Khazanov 1983; Lees and Bates 1974:187). This means that a precondition for the development of specialized pastoralism was the presence of a settled society able to produce stable surpluses of grains needed by the nomads,[9] who purchased these with pastoral products. According to Gilbert (1983:113–115), the existence of a society that practiced intensive agriculture not only enabled the development of pastoral nomadism, but also provided a stimulus for this development. This type of interaction involved a dynamic process. For example, intensive agriculture, which is much more productive than extensive agriculture and animal husbandry, allows for population growth. In turn, because most of these populated areas under intensive cultivation offered few opportunities for animal husbandry, a demand for pastoral products would have been created, encouraging people in marginal

zones where intensive agriculture was not an option to increase the size of their herds and adopt a mobile lifeway.

Examination of the settlement patterns in the Chifeng-Aohan area reveals similarities in site location between the lower and upper Xiajiadian Cultures. These and other archaeological data suggest that in spite of the chronological gap and differences in material culture, these two cultures depended on a similar subsistence economy. Both were sedentary societies that practiced a mixed economy of agriculture, animal husbandry, and possibly hunting. Comparing the dates of these cultures with those of cultures of the Zhongyuan area indicates that the lower and upper Xiajiadian Cultures flourished during periods when no strong political entity occupied the Zhongyuan. During the time when strong political entities (the Shang and early Zhou) existed in the Zhongyuan, the Chifeng-Aohan area displayed few signs of activity or occupation (see Fig. 2). I believe that this correlation reflects the pattern of interaction described above between pastoral and agricultural societies.

It can be argued that the Shang and Zhou dynasties of China practiced intensive agriculture. This economic practice spread, either by direct political control or by indirect influence, to the northern plains of China, where the environmental conditions were also suitable. This kind of subsistence system could not, however, be practiced in the narrow inland valleys of the northeast or the drier areas to the west. I believe that the existence of a stable society that produced reliable surpluses of grain in the Zhongyuan and the northern plains enabled and even stimulated the development of specialized pastoral nomadic societies in these more "marginal" areas. As mentioned earlier, the deterioration of climate conditions in these areas may have "helped convince" people to adapt this new lifeway. However, during times when the stability of the agricultural societies was disrupted, the people living in the marginal areas had to fall back on their ability to cultivate the land because they were then unable to exchange their pastoral products for the necessary grains. During these periods (the so-called "Spring and Autumn" and "Warring States" periods), we see the reappearance of sedentary societies in the Chifeng-Aohan and other similar areas, all of which probably practiced a mixed economy.

Seeing the developments in light of this model can help explain the content of Shang and early Zhou graves found in the northern plains. These graves contained Shang bronzes side by side with typical northern objects, some of which resemble objects of the lower Xiajiadian Culture (Lin 1986:241). The northern plains are exactly the areas where we would expect interaction between pastoral and agricultural societies to have taken place. It is not hard to imagine the herds being brought down from the mountains to be exchanged for grains. The presence of Shang bronzes may indicate that the relations were not limited to the exchange of foodstuffs. Although we possess no material data about the pastoral society, it is not necessary to see it as egalitarian. Social status may have been associated with exotic goods, such as bronzes, which were acquired from the Shang (as gifts or in exchange). Although it may have been impossible for pastoral leaders to bring the bronzes along with them while they traveled with the herds, using bronzes as grave goods in burials located near the area where they were acquired is a reasonable social practice.

Gregory Johnson (1973:159) has suggested that the process of state formation

in southwestern Iran was in part triggered by the response of the sedentary society to demands of the pastoral nomadic population. In his words: "Coordination of local production and seasonal exchange with herders may thus, in conjunction with other processes discussed above, have increased decision making requirements to the point that an expanded decision making organization was necessary." In other words, the sedentary agricultural society may have reacted to stimuli from the pastoral society in the same way as the pastoral society reacted to stimuli from the agricultural society. It is therefore possible to describe a process of positive feedback that resulted in increasing complexity of both the agricultural and the pastoral societies.

Antipastoral biases are inherited in Chinese historiography, which describes these people as "barbarian." The almost complete lack of information on the development of pastoralism in North China may be attributed to this attitude as well as to the objective difficulties confronting attempts to recover archaeological remains of pastoral communities. Be that as it may, I believe that research designed to identify the remains of pastoral seasonal and base camps, recovering data pertaining to their economic and social organization as well as evidence for exchange and other types of interaction with the agricultural society, should be high on the list of priorities for future archaeological projects. Such research could contribute not only to understanding the social and economic phenomenon of pastoralism, but, also, the framework of the above model will enable us to view the development of the "Chinese Civilization" in its broader regional context.

CONCLUSIONS

The issues discussed above are relevant to the general process that some have called "the development of Chinese civilization." In rough outline, the process described above can be summarized as follows: at the end of the third millennium B.C., complex societies (simple chiefdoms) emerged in different parts of China. The elites of these societies gained and maintained their position partly by establishing contact with the elites of other societies. Contact between elites resulted in the creation of what K. C. Chang (1986:234–294) has termed "the Chinese interaction sphere," in which styles, technologies, and social practices were shared by many contemporaneous cultures. During the third and fourth phases of the Erlitou Culture (c. 1800–1600 B.C.), the polity located in the area around present-day Luoyang may have become more powerful than other contemporaneous chiefdoms, although the area under its control or even direct influence does not seem to have extended more than 50 km in any direction. This process of expansion and consolidation of political authority really took off during the early Erligang period (c. 1600–1500 B.C.), when the Shang dynasty seems to have controlled a large part of the Huanghe basin and areas to its north and south. This rapid process of state formation probably affected not only societies that were under the direct political control of the Shang but also those societies that remained politically independent. The way this influence was played out at the local level should not, however, be viewed as a deterministic process.

I believe that, in both the development and the "decline" of the lower Xiajiadian Culture, some outside input played a part in the process. In the earlier pe-

riod (late third–early second millennia B.C.), it is possible to talk about interaction between equal partners. In the later period (second half of the second millennium B.C.), the Shang and early Zhou controlled large states and were probably much stronger than their northern neighbors. Nevertheless, we should not assume that the northern neighbors of the Zhongyuan Cultures were simply passive receivers of influence from the south. The advantage of the models presented here is that they allow us to see outside contributions not as deterministic factors but as providing opportunities to which the local society (or parts of it) reacted. This approach, in effect, focuses attention on local processes even in cases when "big powers" like states interacted with "simple" nomadic societies.

As pointed out by Steponaitis (1978:437), models are "primarily useful in helping us ask meaningful questions of our data, and in allowing us to generate hypotheses which can be tested by other means." With the new openness of Chinese archaeologists to Western ideas and the increasing opportunities for Western archaeologists to participate in archaeological research in China, the prospect for testing these models in the field seems better than ever. This paper demonstrates how far one can examine the processes of social and political developments with currently available data. Future field research that focuses on these processes will allow for more intensive testing of the models presented here.

NOTES

1. Examples for this kind of attitude are too numerous to be listed here. They include An 1981; Li Yangsong 1980; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984:211–218; Zhao 1987. See criticism on this method in Allan 1984; Thorp 1991.
2. Other examples are the *Qijia* Culture of Gansu Province, *Zhukaigou* Culture of central Inner Mongolia and *Yueshi* Culture of Shandong and Jiangsu Provinces.
3. The identification of the third and fourth phases with the Xia or with the Shang dynasty may be seen as the watershed dividing the Chinese archaeologists participating in the debate over the archaeology of the Xia dynasty (see for example how this question is treated in Yin 1986).
4. The information about lower Xiajiadian houses is taken from summaries in Liaoning Sheng Bowuguan 1977; Tian 1992; *Xin Zhongguo de Kaogu Faxian he Yanjiu* 1984; Xu 1986; Zhongguo Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1974; Zhongguo shehui Kexueyuan Kaogu Yanjiusuo Neimenggu Gongzuodui 1979).
5. Perhaps a third compound was discovered more recently, but its details are not yet clear (see Thorp 1991:10–16).
6. See Thorp (1991:14–16) for a discussion of their possible function as temples.
7. As is usually the case, the graves that were chosen to have reports published are probably the most impressive in terms of their content or size.
8. The oracle bones were discovered in strata of the Fuhe Culture, which is earlier than or contemporaneous with the Hongshan Culture.
9. The term "nomads" is used here in a very loose manner, meaning a more mobile lifeway than that of an agricultural village. These people could have been practicing transhumance, seminomadism, or real nomadism.

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ABSTRACT

The archaeological record of two areas is examined: the Yuxi region of the Zhongyuan, where the Erlitou Culture is centered; and the Chifeng-Aohan region of Inner Mongolia, where lower Xiajiadian Culture sites are found. This comparison suggests that although the data from the Erlitou Culture can be interpreted as reflecting a polity that covered a somewhat larger area and was perhaps more centralized than polities of the lower Xiajiadian Culture, the social and political systems of

these two areas were not fundamentally different. The chronology of these cultures as well as evidence for interaction between societies of the Zhongyuan and the Chifeng-Aohan area are used to challenge the traditional Chinese model that describes the emergence of social complexity as the result of political and cultural expansion from the Zhongyuan. Based on these data, several models are presented that, although not ignoring the importance of external outputs, emphasize the way these influences were played out at the local level as well as other local processes. KEYWORDS: Chinese archaeology, North China, Late Neolithic, Early Bronze Age, complex societies, pastoralism.